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Spectral resolution in addition to spatial resolution gains more and more importance when studying colloidal dispersions. Important aspects hereby are to distinguish between organic and inorganic components in colloidal dispersions and to characterize the organic substances. The interaction of iron containing particles with the organic matrix in ground- and seepage waters is of particular interest in this context. Humic substance extracted from a soil in Rosdorf near Göttingen, a calcareous aquic vermudoll (FAO: calcaric phaeozem), has been analyzed spectroscopically using the scanning transmission x-ray microscope (STXM) in a dry state as well as in aqueous dispersion in comparison to a dry sample of a synthetic fulvic acid. The spectra are shown in figure 1. Differences between the samples show clearly. Resonances are assigned to the energies of the absorption peaks and listed in the table in figure 2. The colloidal humic substance and the fulvic acid as well are substances of heterogeneous chemical composition. Therefore, uncertainties may arise in this assignment. However, functional groups within these substances can be identified. Absorption peaks 7 and 8 can be assigned to the L_{III} - and L_{II} - edges of potassium. The shifts in the positions of these peaks compared to edge energies tabulated in the Henke-data can be explained with an ionic bonding of the potassium to the humic substance. We'd like to thank Sue Wirick for her help at the beamline.

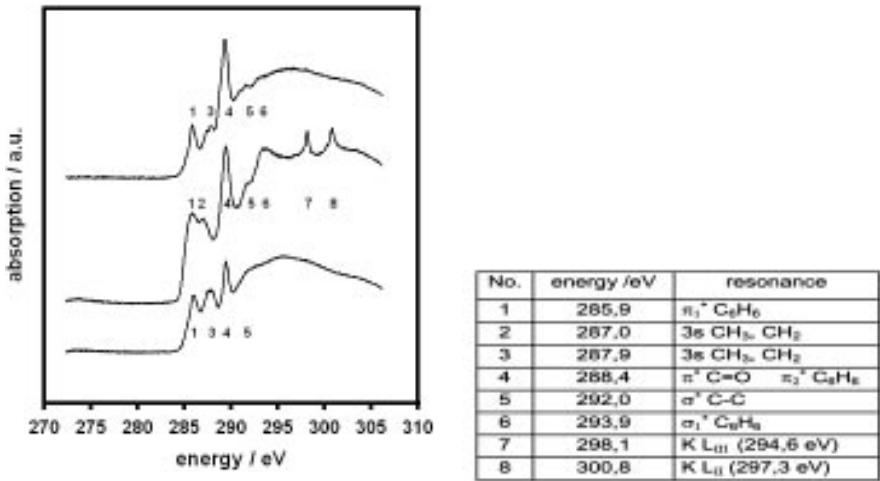


Figure 1. XANES-spectra of a synthetic fulvic acid, dry, and a colloidal humic substance extracted from a soil, a calcareous aquic vermudoll, dry and in aqueous dispersion.

Figure 2. Energies of the absorption peaks seen in fig. 1 and their assignment to resonances and absorption peaks, resp.